CLAIMS:

(1) A **synthetic membrane anchor** or **synthetic molecule construct** of the structure F-S_1-S_2-L where:

- F is selected from the group consisting of carbohydrates;
- S_1-S_2 is a spacer linking F to L; and
- L is a lipid selected from the group consisting of diacyl- and dialkyl-glycerolipids, including glycerophospholipids, and sphingosine derived diacyl- and dialkyl-lipids, including ceramide.

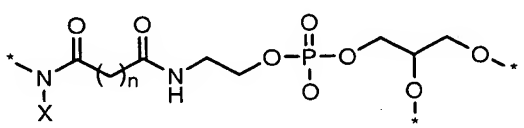
(2) The synthetic membrane anchor or synthetic molecule construct according to any one of claim 1 where L is a lipid selected from the group consisting of diacyl- and dialkyl-glycerolipids, including glycerophospholipids.

(3) The synthetic membrane anchor or synthetic molecule construct according to claims 1 or 2 where L is selected from the group consisting of: diacylglycerolipids, phosphatidate, phosphatidyl choline, phosphatidyl ethanolamine, phosphatidyl serine, phosphatidyl inositol, phosphatidyl glycerol, and diphosphatidyl glycerol derived from one or more of *trans*-3-hexadecenoic acid, *cis*-5-hexadecenoic acid, *cis*-7-hexadecenoic acid, *cis*-9-hexadecenoic acid, *cis*-6-octadecenoic acid, *cis*-9-octadecenoic acid, *trans*-9-octadecenoic acid, *trans*-11-octadecenoic acid, *cis*-11-octadecenoic acid, *cis*-11-eicosenoic acid or *cis*-13-docsenoic acid.

(4) The synthetic membrane anchor or synthetic molecule construct according to claim 3 where the lipid is derived from one or more *cis*-destaurated fatty acids.

(5) The synthetic membrane anchor or synthetic molecule construct according to claim 4 where L is selected from the group consisting of: 1,2-O-dioleoyl-sn-glycero-3-phosphatidylethanolamine (DOPE), 1,2-O-distearyl-sn-glycero-3-phosphatidylethanolamine (DSPE) and *rac*-1,2-dioleoylglycerol (DOG).

(6) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 5 where L is a glycerophospholipid and the synthetic molecule construct includes the substructure:



where n = 3 to 5, X is H or C, and * is other than H.

(7) The synthetic membrane anchor or synthetic molecule construct according to claim 6 where n is 3.

(8) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 7 where the synthetic membrane anchor or synthetic molecule construct is water soluble.

(9) The synthetic membrane anchor or synthetic molecule construct according to claim 8 where the synthetic membrane anchor or synthetic molecule construct spontaneously incorporates into a lipid bi-layer when a solution of the synthetic membrane anchor or synthetic molecule construct is contacted with the lipid bi-layer.

(10) The synthetic membrane anchor or synthetic molecule construct according to claim 9 where the synthetic membrane anchor or synthetic molecule construct stably incorporates into the lipid bilayer.

(11) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 10 where F, S_1, S_2 and L are covalently linked.

(12) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 11 where F is selected from the group consisting of naturally occurring or synthetic glycotopes.

(13) The synthetic membrane anchor or synthetic molecule construct according to claim 12 where F is a naturally occurring or synthetic glycotope consisting of three (trisaccharide) or more sugar units.

(14) The synthetic membrane anchor or synthetic molecule construct according to claim 13 where F is a glycotope selected from the group consisting of lacto-neo-tetraosyl, lactotetraosyl, lacto-nor-hexaosyl, lacto-iso-octaosyl, globoteraosyl, globo-neo-tetraosyl, globopentaosyl, gangliotetraosyl, gangliotriaosyl, gangliopentaosyl, isoglobotriaosyl, isoglobotetraosyl, mucotriaosyl and mucotetraosyl series of oligosaccharides.

(15) The synthetic membrane anchor or synthetic molecule construct according to claim 14 where F is selected from the group of glycotopes comprising the terminal sugars GalNAcα1-3(Fucα1-2)Galß; Galα1-3Galß; Galß; Galα1-3(Fucα1-2)Galß; NeuAcα2-3Galß; NeuAcα2-6Galß; Fucα1-2Galß; Galß1-4GlcNAcß1-6(Galß1-4GlcNAcß1-3)Galß; Fucα1-2Galß1-4GlcNAcß1-6(Fucα1-2Galß1-4GlcNAcß1-3)Galß; Fucα1-2Galß1-4GlcNAcß1-6(NeuAcα2-3Galß1-4GlcNAcß1-3)Galß; NeuAcα2-3Galß1-4GlcNAcß1-

6(NeuAcα2-3Galβ1-4GlcNAcβ1-3)Galβ; Galα1-4Galβ1-4Glc; GalNAcβ1-3Galα1-4Galβ1-4Glc; GalNAcα1-3GalNAcβ1-3Galα1-4Galβ1-4Glc; or GalNAcβ1-3GalNAcβ1-3Galα1-4Galβ1-4Glc.

(16) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 15 where when F is a glycotope, L is a glycerophospholipid and S_2 is selected from the group including: $-CO(CH_2)_3CO-$, $-CO(CH_2)_4CO-$ (adipate), $-CO(CH_2)_5CO-$, and $-CO(CH_2)_5NHCO(CH_2)_5CO-$.

(17) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 16 where S_1 is a C_{3-5}-aminoalkyl selected from the group consisting of: 3-aminopropyl, 4-aminobutyl, or 5-aminopentyl.

(18) The synthetic membrane anchor or synthetic molecule construct according to claim 17 where S_1 is 3-aminopropyl.

(19) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 18 where F mediates a cell-cell or cell-surface interaction.

(20) The synthetic membrane anchor or synthetic molecule construct according to claim 19 where F is carbohydrate with an affinity for a component expressed on a targeted cell or surface.

(21) The synthetic membrane anchor or synthetic molecule construct according to claim 20 where F has an affinity for a component expressed on epithelial cells or extra-cellular matrices.

(22) The synthetic membrane anchor or synthetic molecule construct according to claim 21 where F has an affinity for a component expressed on the epithelial cells or the extra-cellular matrix of the endometrium.

(23) The synthetic membrane anchor or synthetic molecule construct according to claim 22 where the component expressed on the epithelial cells or the extra-cellular matrix of the endometrium can be a naturally expressed component or an exogenously incorporated component.

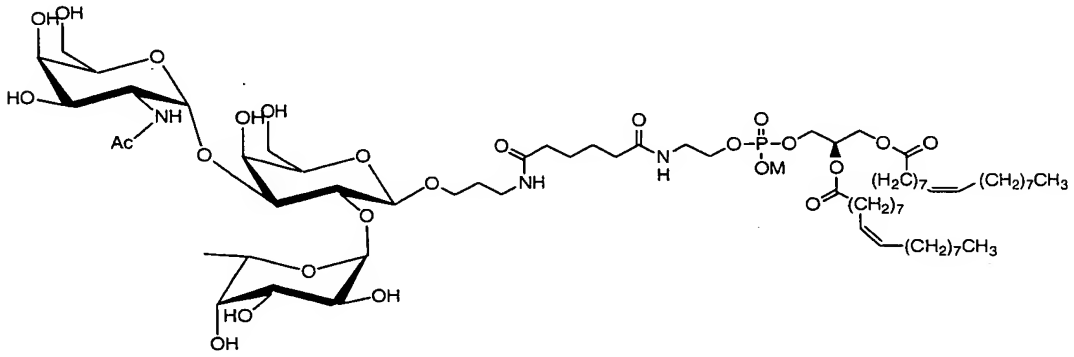
(24) The synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 18 where F mediates a cell-solute interaction.

(25) The synthetic membrane anchor or synthetic molecule construct according to claim 24 where F is a ligand for a binding molecule where the presence of the binding molecule is

diagnostic for a pathological condition.

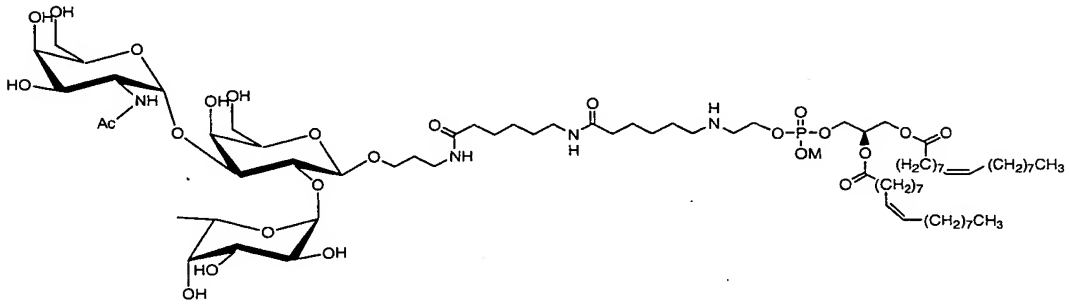
(26) The synthetic membrane anchor or synthetic molecule construct according to claim 25 where F is a ligand for an antibody (immunoglobulin).

(27) A synthetic membrane anchor or synthetic molecule construct of the structure:



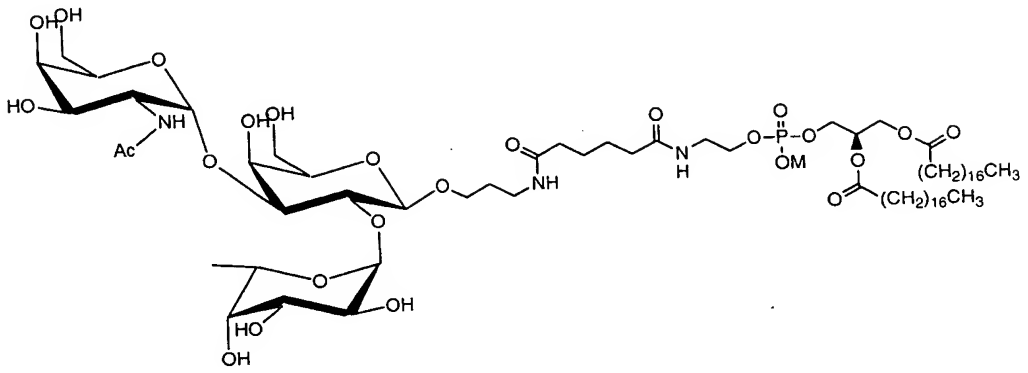
designated A_{tri}-sp-Ad-DOPE (**I**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(28) A synthetic membrane anchor or synthetic molecule construct of the structure:



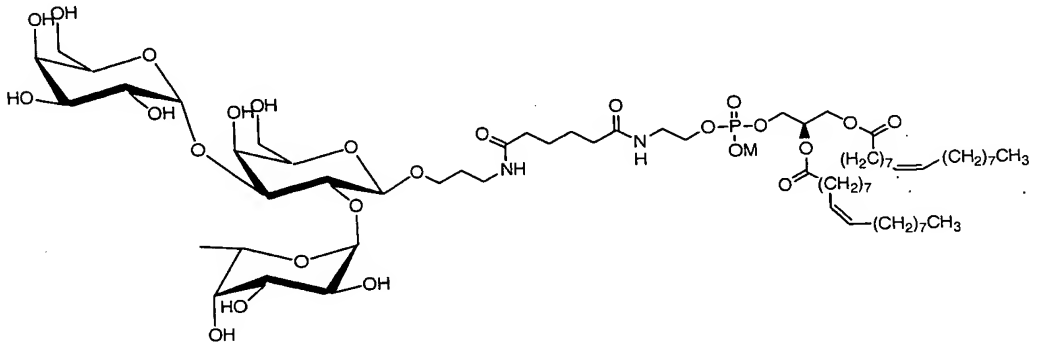
designated A_{tri}-spsp_1-Ad-DOPE (**II**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(29) A synthetic membrane anchor or synthetic molecule construct of the structure:



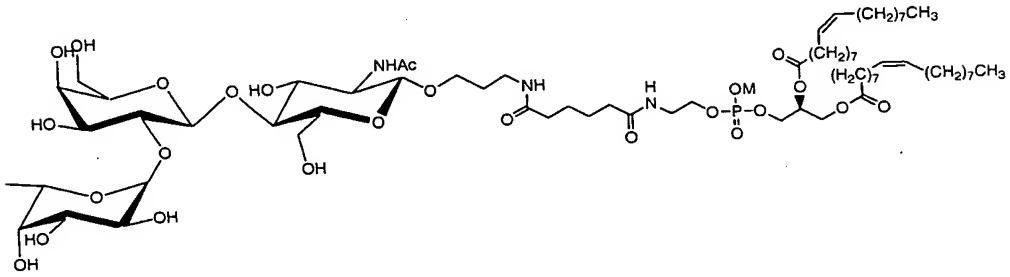
designated A_{tri}-sp-Ad-DSPE (**III**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(30) A synthetic membrane anchor or synthetic molecule construct of the structure:



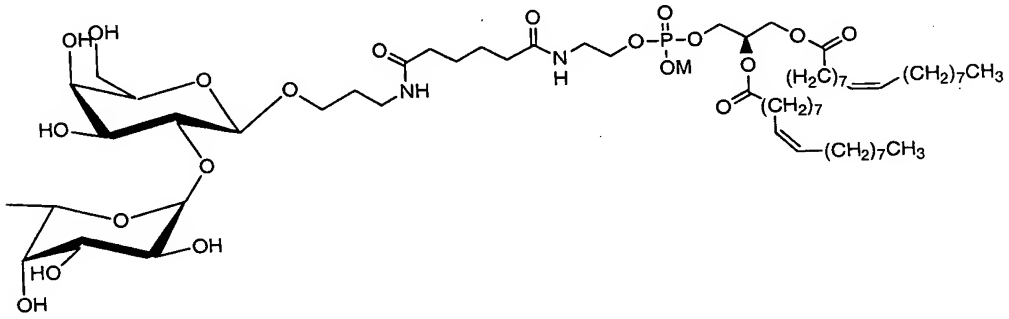
designated B_{tri}-sp-Ad-DOPE (**VI**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(31) A synthetic membrane anchor or synthetic molecule construct of the structure:



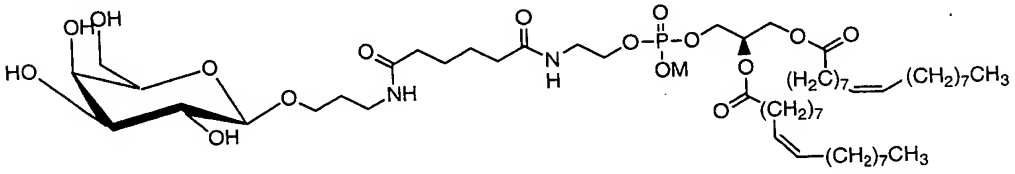
designated H_{tri}-sp-Ad-DOPE (**VII**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(32) A synthetic membrane anchor or synthetic molecule construct of the structure:



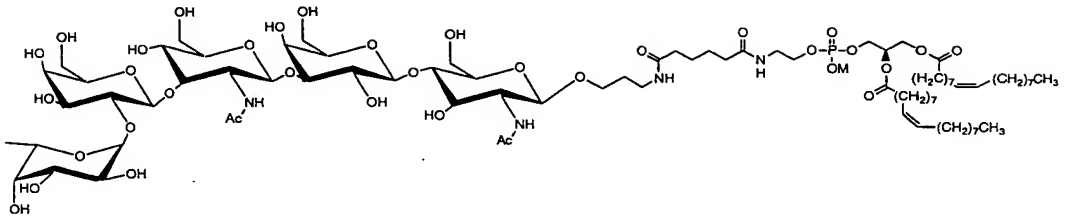
designated H_{di}-sp-Ad-DOPE (**VIII**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(33) A synthetic membrane anchor or synthetic molecule construct of the structure:



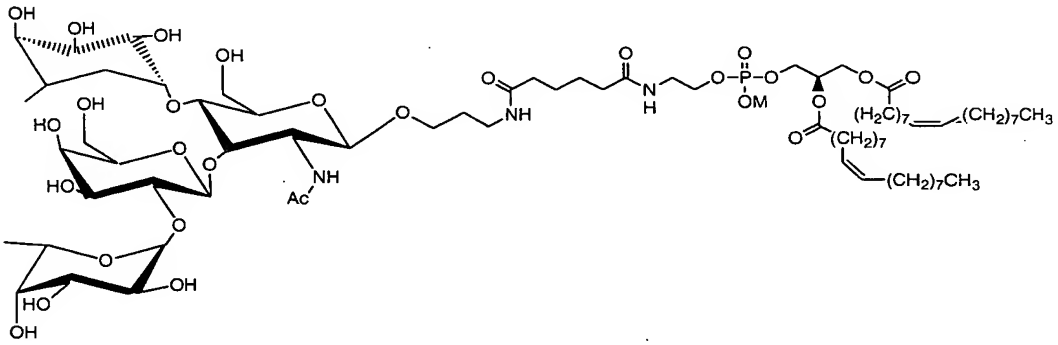
designated Galβ_i-sp-Ad-DOPE (**IX**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(34) A synthetic membrane anchor or synthetic molecule construct of the structure:



designated Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (**XII**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(35) A synthetic membrane anchor or synthetic molecule construct of the structure:



designated Fucα1-2Galβ1-3(Fucα1-4)GlcNAc-sp-Ad-DOPE (**XIII**) and M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(36) A **method** of preparing a synthetic membrane anchor or synthetic molecule construct of the structure F-S_1-S_2-L including the steps:

- Reacting an activator (A) with a lipid (L) to provide an activated lipid (A-L);
- Derivatising an antigen (F) to provide a derivatised antigen (F-S_1); and
- Condensing A-L with F-S_1 to provide the construct;

where:

A is an activator selected from the group including: *bis*(N-hydroxysuccinimidyl), *bis*(4-nitrophenyl), *bis*(pentafluorophenyl), *bis*(pentachlorophenyl) esters of carbodioic acids (C_3 to C_7);

L is a lipid selected from the group consisting of diacyl- and dialkyl-glycerolipids, including glycerophospholipids, and sphingosine derived diacyl- and dialkyl-lipids, including ceramide.
F is selected from the group consisting of carbohydrates,; and
S_1-S_2 is a spacer linking F to L where S_1 is selected from the group including: primary aminoalkyl, secondary aliphatic aminoalkyl or primary aromatic amine; and S_2 is absent or selected from the group including: -$CO(CH_2)_3CO$-, -$CO(CH_2)_4CO$- (adipate), and -$CO(CH_2)_5CO$-.

(37) The method according to claim 36 where the synthetic membrane anchor or synthetic molecule construct is water soluble.

(38) The method according to claim 36 or 37 where the synthetic membrane anchor or synthetic molecule construct spontaneously incorporates into a lipid bi-layer when a solution of the synthetic membrane anchor or synthetic molecule construct is contacted with the lipid bi-layer.

(39) The method according to claim 38 where the synthetic molecule construct stably incorporates into the lipid bilayer.

(40) The method according to any one of claims 36 to 39 where F, S_1, S_2 and L are covalently linked.

(41) The method according to any one of claims 36 to 40 where F is selected from the group consisting of naturally occurring or synthetic glycotopes.

(42) The method according to claim 41 where F is selected from the group consisting of naturally occurring or synthetic glycotopes.

(43) The method according to any one of claims 36 to 42 where L is a lipid selected from the group consisting of diacyl- and dialkyl-glycerolipids, including glycerophospholipids.

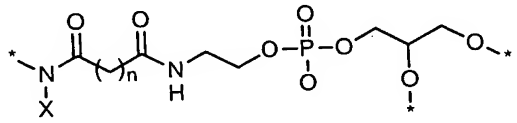
(44) The method according to claim 43 where L is selected from the group consisting of: diacylglycerolipids, phosphatidate, phosphatidyl choline, phosphatidyl ethanolamine, phosphatidyl serine, phosphatidyl inositol, phosphatidyl glycerol, and diphosphatidyl glycerol derived from one or more of *trans*-3-hexadecenoic acid, *cis*-5-hexadecenoic acid, *cis*-7-hexadecenoic acid, *cis*-9-hexadecenoic acid, *cis*-6-octadecenoic acid, *cis*-9-octadecenoic acid, *trans*-9-octadecenoic acid, *trans*-11-octadecenoic acid, *cis*-11-octadecenoic acid, *cis*-11-eicosenoic acid or *cis*-13-docsenoic acid.

(45) The method according to claim 44 where the lipid is derived from one or more *cis*-

destaurated fatty acids.

(46) The method according to claim 45 where L is selected from the group consisting of: 1,2-O-dioleoyl-sn-glycero-3-phosphatidylethanolamine (DOPE), 1,2-O-distearyl-sn-glycero-3-phosphatidylethanolamine (DSPE) and *rac*-1,2-dioleoylglycerol (DOG).

(47) The method according to any one of claims 36 to 46 where L is a glycerophospholipid and the synthetic molecule construct includes the substructure:



where n = 3 to 5, X is H or C, and * is other than H.

(48) The method according to claim 47 where n is 3.

(49) The method according to any one of claims 36 to 46 where A and S_1 are selected to provide a water soluble synthetic molecule construct.

(50) The method according to any one of claims 36 to 49 where F is a naturally occurring or synthetic glycotope.

(51) The method according to claim 50 where F is a naturally occurring or synthetic glycotope consisting of three (trisaccharide) or more sugar units.

(52) The method according to claim 50 where F is a glycotope selected from the group consisting of lacto-neo-tetraosyl, lactotetraosyl, lacto-nor-hexaosyl, lacto-iso-octaosyl, globoteraosyl, globo-neo-tetraosyl, globopentaosyl, gangliotetraosyl, gangliotriaosyl, gangliopentaosyl, isoglobotriaosyl, isoglobotetraosyl, mucotriaosyl and mucotetraosyl series of oligosaccharides.

(53) The method according to claim 50 where F is selected from the group of glycotopes comprising the terminal sugars GalNAcα1-3(Fucα1-2)Galß; Galα1-3Galß; Galß; Galα1-3(Fucα1-2)Galß; NeuAcα2-3Galß; NeuAcα2-6Galß; Fucα1-2Galß; Galß1-4GlcNAcß1-6(Galß1-4GlcNAcß1-3)Galß; Fucα1-2Galß1-4GlcNAcß1-6(Fucα1-2Galß1-4GlcNAcß1-3)Galß; Fucα1-2Galß1-4GlcNAcß1-6(NeuAcα2-3Galß1-4GlcNAcß1-3)Galß; NeuAcα2-3Galß1-4GlcNAcß1-6(NeuAcα2-3Galß1-4GlcNAcß1-3)Galß; Galα1-4Galß1-4Glc; GalNAcß1-3Galα1-4Galß1-4Glc; GalNAcα1-3GalNAcß1-3Galα1-4Galß1-4Glc; or GalNAcß1-3GalNAcß1-3Galα1-4Galß1-4Glc.

(54) The method according to any one of claims 36 to 53 where when F is a glycotope, L is a glycerophospholipid and S_2 is selected from the group including: $-CO(CH_2)_3CO-$, $-CO(CH_2)_4CO-$ (adipate), $-CO(CH_2)_5CO-$ and $-CO(CH_2)_5NHCO(CH_2)_5CO-$.

(55) The method according to any one of claims 36 to 54 where S_1 is a C_{3-5}-aminoalkyl selected from the group consisting of: 3-aminopropyl, 4-aminobutyl, or 5-aminopentyl.

(56) The method according to claim 55 where S_1 is 3-aminopropyl.

(57) The method according to any one of claims 36 to 49 where F mediates a cell-cell or cell-surface interaction.

(58) The method according to claim 57 where F is a carbohydrate with an affinity for a component expressed on a targeted cell or surface.

(59) The method according to claim 58 where F has an affinity for a component expressed on epithelial cells or extra-cellular matrices.

(60) The method according to claim 59 where F has an affinity for a component expressed on the epithelial cells or the extra-cellular matrix of the endometrium.

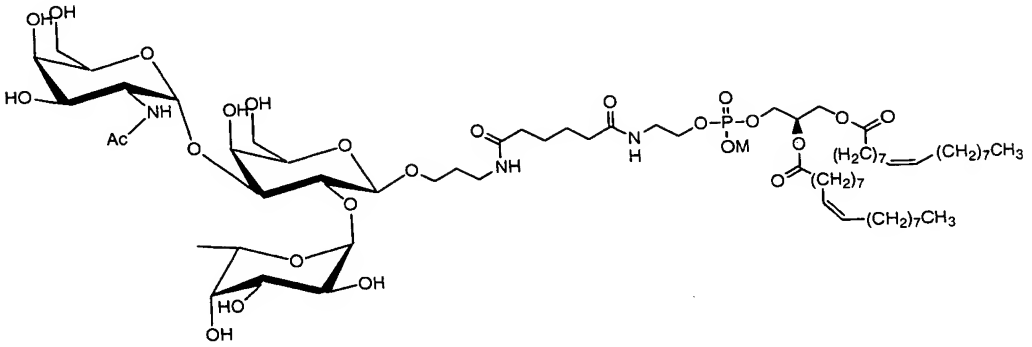
(61) The method according to claim 60 where the component expressed on the epithelial cells or the extra-cellular matrix of the endometrium can be a naturally expressed component or an exogenously incorporated component.

(62) The method according to any one of claims 36 to 49 where F is a synthetic molecule construct that mediates a cell-solute interaction.

(63) The method according to claim 62 where F is a ligand for a binding molecule where the presence of the binding molecule is diagnostic for a pathological condition.

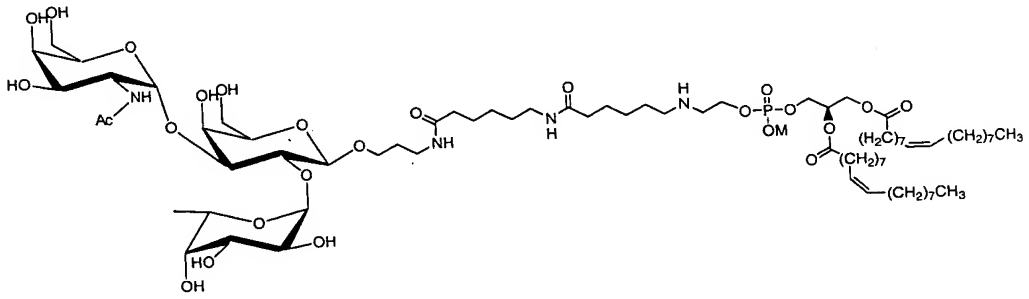
(64) The method according to claim 63 where F is a ligand for an antibody (immunoglobulin).

(65) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



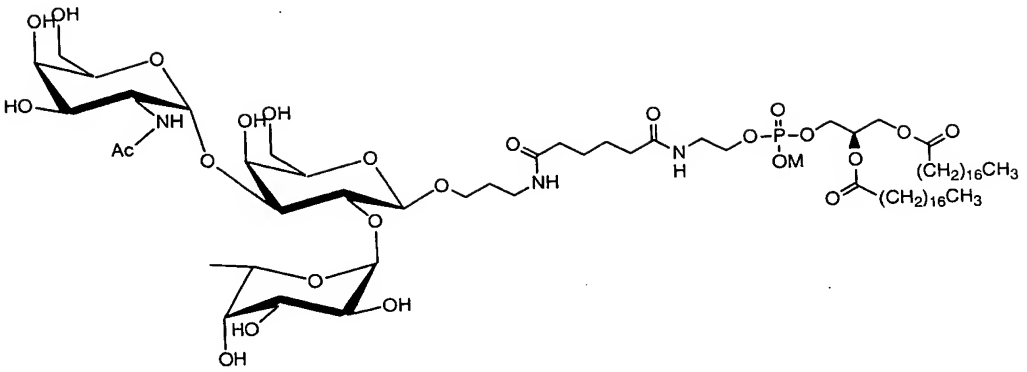
designated A_{tri}-sp-Ad-DOPE (**I**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(66) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



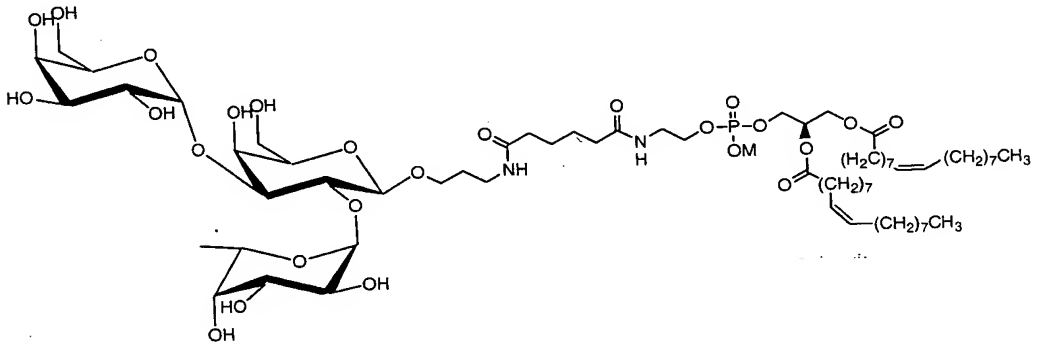
designated A_{tri}-spsp_1-Ad-DOPE (**II**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(67) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



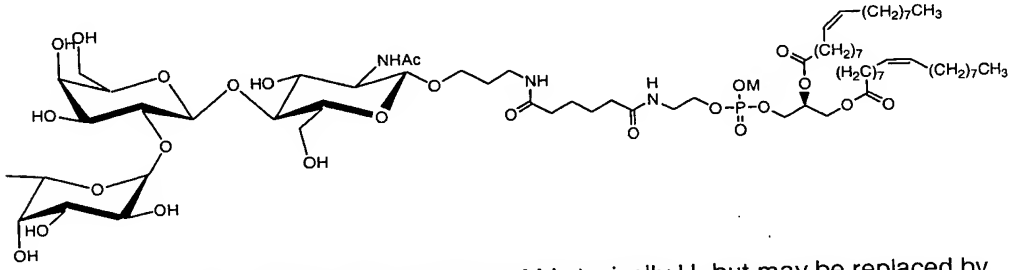
designated A_{tri}-sp-Ad-DSPE (**III**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(68) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



designated B_{tri}-sp-Ad-DOPE (**VI**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

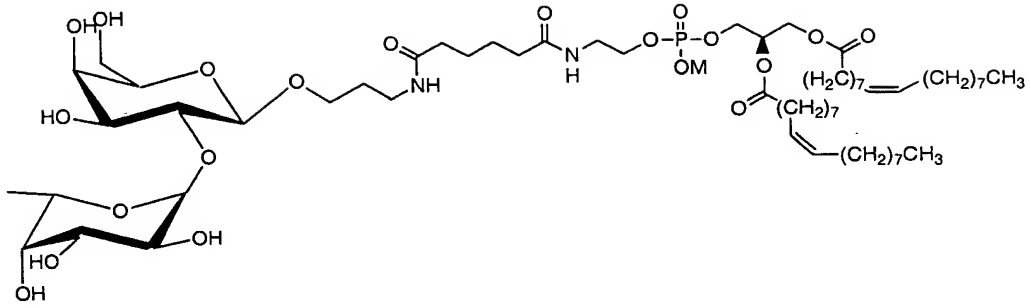
(69) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



designated H_{tri}-sp-Ad-DOPE (**VII**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

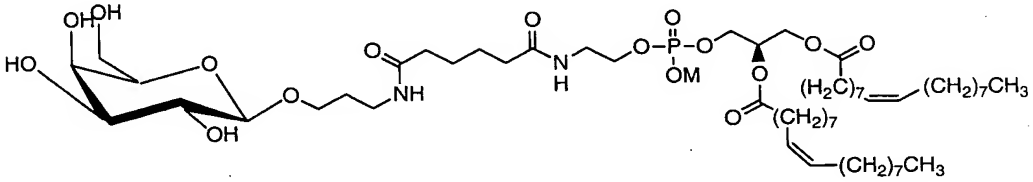
(70) The method according to claim 36 where the water soluble synthetic molecule construct

has the structure:



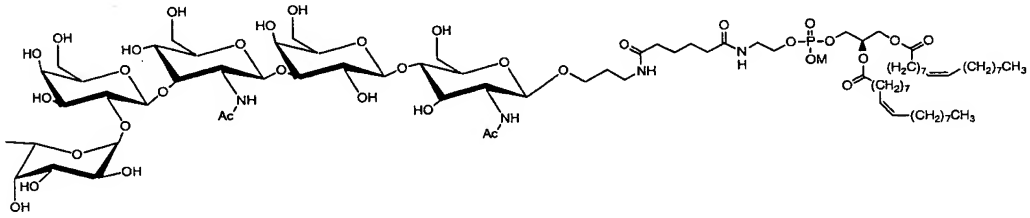
designated H_{di}-sp-Ad-DOPE (**VIII**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(71) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



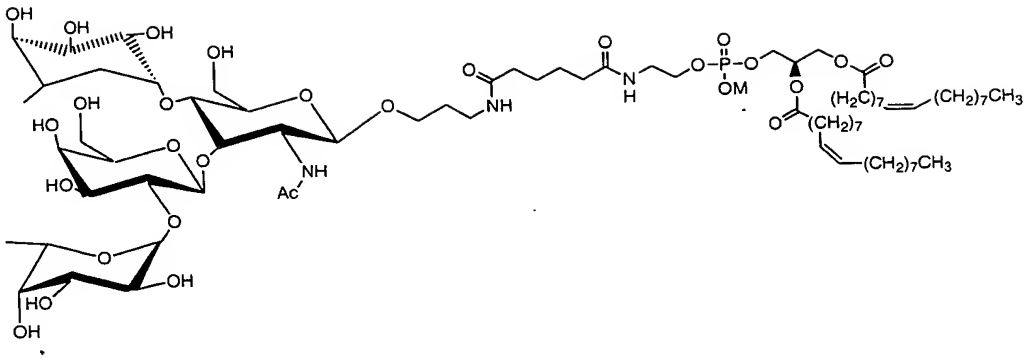
designated Galß$_i$-sp-Ad-DOPE (**IX**);

(72) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



designated Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (**XII**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(73) The method according to claim 36 where the water soluble synthetic molecule construct has the structure:



designated Fucα1-2Galβ1-3(Fucα1-4)GlcNAc-sp-Ad-DOPE (**XIII**) and where M is typically H, but may be replaced by another monovalent cation such as Na^+, K^+ or NH_4^+.

(74) A water **soluble synthetic membrane anchor** or **synthetic molecule construct** prepared by a method according to any one of claims 36 to 73.

(75) A **method** of effecting qualitative and/or quantitative changes in the surface antigens expressed by a cell or multi-cellular structure including the step:

- Contacting a suspension of the cell or multi-cellular structure with a water soluble synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 35 or 74 for a time and at a temperature sufficient to effect the qualitative and/or quantitative change in the surface antigens expressed by the cell or multi-cellular structure.

(76) The method according to claim 75 where the cell or multi-cellular structure is of human or murine origin.

(77) The method according to claim 75 or 76 where the concentration of the water soluble synthetic membrane anchor or synthetic molecule construct in the suspension is in the range 0.1 to 10 mg/mL.

(78) The method according to any one of claims 75 to 77 where the suspension of the cell or multi-cellular structure is contacted with the water soluble synthetic membrane anchor or synthetic molecule construct at a temperature in the range 2 to 37 °C.

(79) The method according claim 78 where the suspension of the cell or multi-cellular structure is contacted with the solution of the water soluble synthetic membrane anchor or synthetic molecule construct at a temperature in the range 2 to 25 °C.

(80) The method according claim 79 where the suspension of the cell or multi-cellular

structure is contacted with the solution of the water soluble synthetic membrane anchor or synthetic molecule construct at a temperature in the range 2 to 4 °C.

(81) The method according to any one of claims 75 to 80 where F is selected from the group of glycotopes comprising the terminal sugars GalNAcα1-3(Fucα1-2)Galß; Galα1-3Galß; Galß; Galα1-3(Fucα1-2)Galß; NeuAcα2-3Galß; NeuAcα2-6Galß; Fucα1-2Galß; Galß1-4GlcNAcß1-6(Galß1-4GlcNAcß1-3)Galß; Fucα1-2Galß1-4GlcNAcß1-6(Fucα1-2Galß1-4GlcNAcß1-3)Galß; Fucα1-2Galß1-4GlcNAcß1-6(NeuAcα2-3Galß1-4GlcNAcß1-3)Galß; NeuAcα2-3Galß1-4GlcNAcß1-6(NeuAcα2-3Galß1-4GlcNAcß1-3)Galß; Galα1-4Galß1-4Glc; GalNAcß1-3Galα1-4Galß1-4Glc; GalNAcα1-3GalNAcß1-3Galα1-4Galß1-4Glc; or GalNAcß1-3GalNAcß1-3Galα1-4Galß1-4Glc.

(82) The method according to claim 81 where F is selected from the group of glycotopes consisting of the oligosaccharides GalNAcα1-3(Fucα1-2)Galß and Galα1-3(Fucα1-2)Galß.

(83) The method according to any one of claim 75 or 80 where the synthetic membrane anchor or synthetic molecule construct is selected from the group including: A_{tri}-sp-Ad-DOPE (**I**); A_{tri}-spsp_1-Ad-DOPE (**II**); A_{tri}-sp-Ad-DSPE (**III**); B_{tri}-sp-Ad-DOPE (**VI**); H_{tri}-sp-Ad-DOPE (**VII**); H_{di}-sp-Ad-DOPE (**VIII**); Galß$_i$-sp-Ad-DOPE (**IX**); Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (**XII**); and Fucα1-2Galβ1-3(Fucα1-4)GlcNAc-sp-Ad-DOPE (**XIII**).

(84) The method according to any one of claims 75 to 83 where the cell or multi-cellular structure is an embryo.

(85) The method according to claim 84 where F is an attachment molecule where the attachment molecule has an affinity for a component expressed on the epithelial cells or the extra-cellular matrix of the endometrium.

(86) The method according to claim 85 where the component expressed on the epithelial cells or the extra-cellular matrix of the endometrium can be a naturally expressed component or an exogenously incorporated component.

(87) The method according to any one of claims 75 to 83 where the cell or multi-cellular structure is a red blood cell.

(88) The method according to claim 87 where F is a ligand for a binding molecule where the presence of the binding molecule is diagnostic for a pathological condition.

(89) The method according to claim 88 where F is a ligand for an antibody (immunoglobulin).

(90) A **cell or multi-cellular structure** incorporating a synthetic membrane anchor or water soluble synthetic molecule construct according to any one of claims 1 to 35 or 74.

(91) The cell or multi-cell structure according to claim 90 where the cell or multi-cellular structure is of human or murine origin.

(92) The cell or multi-cell structure according to claim 90 or 91 where the cell or multi-cell structure is a red blood cell incorporating a water soluble synthetic molecule construct selected from the group including: A_{tri}-sp-Ad-DOPE (**I**); A_{tri}-spsp_1-Ad-DOPE (**II**); A_{tri}-sp-Ad-DSPE (**III**); B_{tri}-sp-Ad-DOPE (**VI**); H_{tri}-sp-Ad-DOPE (**VII**); H_{di}-sp-Ad-DOPE (**VIII**); Galß$_i$-sp-Ad-DOPE (**IX**); Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (**XII**); and Fucα1-2Galβ1-3(Fucα1-4)GlcNAc-sp-Ad-DOPE (**XIII**).

(93) The cell or multi-cell structure according to claim 90 or 91 where the cell or multi-cell structure is an embryo incorporating a water soluble synthetic molecule construct selected from the group consisting of: A_{tri}-sp-Ad-DOPE (**I**); A_{tri}-spsp_1-Ad-DOPE (**II**); A_{tri}-sp-Ad-DSPE (**III**); B_{tri}-sp-Ad-DOPE (**VI**); H_{tri}-sp-Ad-DOPE (**VII**); H_{di}-sp-Ad-DOPE (**VIII**); Galß$_i$-sp-Ad-DOPE (**IX**); Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (**XII**); and Fucα1-2Galβ1-3(Fucα1-4)GlcNAc-sp-Ad-DOPE (**XIII**).

(94) A **kit** comprising a dried preparation or solution of a water soluble synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 35 or 74.

(95) The kit according to claim 97 where water soluble synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 35 or 74 is selected from the group consisting of: A_{tri}-sp-Ad-DOPE (**I**); A_{tri}-spsp_1-Ad-DOPE (**II**); A_{tri}-sp-Ad-DSPE (**III**); B_{tri}-sp-Ad-DOPE (**VI**); H_{tri}-sp-Ad-DOPE (**VII**); H_{di}-sp-Ad-DOPE (**VIII**); Galß$_i$-sp-Ad-DOPE (**IX**); Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (**XII**); and Fucα1-2Galβ1-3(Fucα1-4)GlcNAc-sp-Ad-DOPE (**XIII**).

(96) A **kit** comprising a suspension in a suspending solution of cells or multi-cellular structures according to any one of claims 90 to 93.

(97) The kit according to claim 96 where the suspending solution is substantially free of lipid.

(98) The kit according to claim 96 or 97 where the cell or multi-cellular structure is of human or murine origin.

(99) The kit according to any one of claims 96 to 98 where the cells are red blood cells that do not naturally express A- or B-antigen and incorporate a water soluble synthetic

molecule construct selected from the group consisting of: A_{tri}-sp-Ad-DOPE (**I**); A_{tri}-spsp_1-Ad-DOPE (**II**); A_{tri}-sp-Ad-DSPE (**III**); B_{tri}-sp-Ad-DOPE (**VI**); H_{tri}-sp-Ad-DOPE (**VII**); H_{di}-sp-Ad-DOPE (**VIII**); Galß$_i$-sp-Ad-DOPE (**IX**); Fucα1-2Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAc-sp-Ad-DOPE (**XII**); and Fucα1-2Galβ1-3(Fucα1-4)GlcNAc-sp-Ad-DOPE (**XIII**).

(100) The kit according to claim 99 where the suspending solution additionally contains one or more antibodies.

(101) The kit according to claim 100 where the cells are sensitivity controls.

(102) A **pharmaceutical preparation** comprising a dried preparation or solution of a water soluble synthetic membrane anchor or synthetic molecule construct according to any one of claims 1 to 36 or 74.

(103) The pharmaceutical preparation according to claim 102 where the pharmaceutical preparation is in a form for administration by inhalation.

(104) The pharmaceutical preparation according to claim 103 where the pharmaceutical preparation is in a form for administration by injection.

(105) A **pharmaceutical preparation** comprising cells or multi-cellular structures according to any one of claims 90 to 93.

(106) The pharmaceutical preparation according to claim 105 where the cells or multi-cellular structures are of human or murine origin.

(107) The pharmaceutical preparation according to claim 105 or 106 where the pharmaceutical preparation is in a form for administration by inhalation.

(108) The pharmaceutical preparation according to claim 105 or 106 where the pharmaceutical preparation is in a form for administration by injection.